**Course: 7th Mathematics CCSS Standard Number(s): 7.NS.1ab Day: 1**

**Unit # and Title: Unit One- Rational Number Operations Block(s)/Period(s): 1 2 3 4 5 6**

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| **Unit Essential Question(s):** | **Where do we see rational numbers being used in our world?** | | | |
| **Learning Target(s)**  **“I can statements”** | * I can describe real-world situations where opposite quantities have a sum of zero. | | | |
| **Essential Vocabulary** | Integer  Above/Below  Gain/Loss  Deposit/Withdraw | | | negative  opposite  positive |
| **Resources and Materials** | **Teacher** | | **Student** | |
| Worksheet #1 Thermometer Warm-Up Key  Sentence Strip Activity  Student Worksheet #2 Answer Key  [Worksheets/Resources](http://www.nsa.gov/academia/_files/collected_learning/middle_school/number-theory/integers_operations.pdf) | | Worksheet #1 Thermometer Warm-Up  T-Chart  Student Worksheet # 2 | |
| **8 Mathematical Practices:** | | | | |
| * 1. Make sense of problems and persevere in solving them. * 2. Reason abstractly and quantitatively. * 3. Construct viable arguments and critique the reasoning of others. * 4. Model with mathematics. | | 5. Use appropriate tools strategically.  6. Attend to precision.  7. Look for and make use of structure.  8. Look for and express regularity in repeated reasoning. | | |
| **Activating Strategy**  **(Opening Activity)** | The teacher begins by presenting a Fahrenheit thermometer to the class and asking a question: “What is the temperature on a hot, sunny day?” Have the student point out the degree on the thermometer. Ask a few other questions similar to this making sure the answer would be a positive number. (See Student Worksheet #1.) Next, ask them what it means for the temperature to be 10 degrees below zero and show where this is on the thermometer. Explain that you would use a negative sign to write this number since it is below zero. Next, ask them where 15 degrees below zero would be on the thermometer, and then ask them whether it is hotter or colder than 10 degrees below zero. Since 15 degrees below zero is colder (or has less temperature) than 10 degrees below zero, negative 15 is less than negative 10.  1.) What is the temperature on a hot and sunny day? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  2.) What would be the temperature on a cool spring day? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  3.) What would be the temperature on a snowy day? \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_  4.) Write a temperature of 10 below zero? \_\_\_\_\_\_\_\_\_\_  5.) Label where 15 below zero would be on the thermometer.  6.) Which is colder, 10 below zero or 15 below zero? \_\_\_\_\_\_\_\_ Why? | | | |
| **Cognitive Teaching Strategies**  **Me/We/Few/You**  **(TIP-Teacher input**  **SAP-Student actively participates**  **GP – Guided Practice**  **IP-Independent Practice)** | *Turn the thermometer sideways so it becomes like a number line to demonstrate that negative numbers are to the left of zero and positive numbers are to the right of zero with zero being neither positive nor negative. Explain that, just as the numbers at the bottom of the thermometer are smaller that those above them, numbers on a number line that are on the left are smaller than numbers to the right of them. Define integers*  Sentence strip activity. (See Teacher Resource Sheet #1.) Students will place sentence strips in the appropriate column (positive/negative) of the chart. After this activity, Student Worksheet #2 will be given for students to identify the integer associated with each situation and to practice ordering integers.  Embedded Assessment – Break the class into 2 or more teams. Give each student an index card with an integer written on it. The students must hold the index card in front of them with the integer facing out so all others can see the integer. Without talking or communicating in any way, the students in each group must line themselves up in order from smallest to largest. As each group finishes, the students in that group should raise their hands so the teacher will know which groups finished and in what order. After all are finished, either each group can check the other group(s) or the teacher can check to see if the groups were correct. A prize or extra credit can be  given to the first group who finishes and is correct. | | | |
| **Summarizing Strategy**  **(Closing Activity)** | For those who have understood the lesson, they could write down situations involving integers and use these to work with those students who are having difficulty. | | | |
| **Assessment/Homework** | Student Worksheet # 2  Possible Journal Prompts:   * Write a letter to someone in your family about what you learned today. * Write a letter to someone who was absent from class today about what you learned. * Write a letter to your pet about what you learned today. | | | |
| **Extending/Refining** | Refining:  Ask students to come up with their own integer sentences to place on T-chart  Extending:  Ask students what the temperature is outside represented as a integer.  Share student journal prompts with the class (without names on them). Ask students to critique the journal prompts in their groups. | | | |